Tuesday, March 14, 2010

Submitted by: Mike Healy, Partner, Skyline Innovations (mhealy@skylineinnovations.com)

RE: Senate Bill 1 - AN ACT CONCERNING CONNECTICUT'S ENERGY FUTURE

POSITION: Support with Amendment: Include Solar Water Heating as a Tier One Solar Resource within the Renewable Portfolio Standard and eligible to receive Solar Renewable Energy Credits

The Honorable Senator John W. Fonfara Co-Chair Energy and Technology Committee Connecticut Senate	The Honorable Representative Vickie Orsini Nardello Co-Chair Energy and Technology Committee Connecticut House of Representatives

Madam and Mr. Chair and members of the Committee, my name is Mike Healy and I am a partner at Skyline Innovations, one of the largest solar finance and development companies in the U.S. focusing specifically on investment in solar water heating projects. *As a member of the solar thermal industry I would like to support this legislation, however I cannot do so unless the legislation is amended such that solar water heating is an eligible tier one solar resource within the Renewable Portfolio Standard and therefore eligible for Solar Renewable Energy Credits (SRECs).* A majority of Skyline's project investors are located right here in Connecticut, but we are unable to invest in solar water heating projects within the state at this time because a stable and sustainable solar water heating market currently does not exist in Connecticut - the proposed amendment would create a stable and sustainable solar water heating market as well as make project investment possible within Connecticut. Twelve states, including the District of Columbia, currently include solar water heating generation in their RPS objectives and Connecticut, who has a growing solar water heating industry including four manufacturers based within the state, should take similar steps forward.

Solar water heating (SWH) systems use the sun to provide a portion of the total hot water consumption for residential and commercial buildings, reducing the quantity of traditional energy sources used to heat water, by generating thermal energy from solar radiation. This technology is mature, extremely efficient, and production forecasts are well understood as are the labor and maintenance requirements. There are many benefits to including solar water heating within Connecticut's RPS and they include:

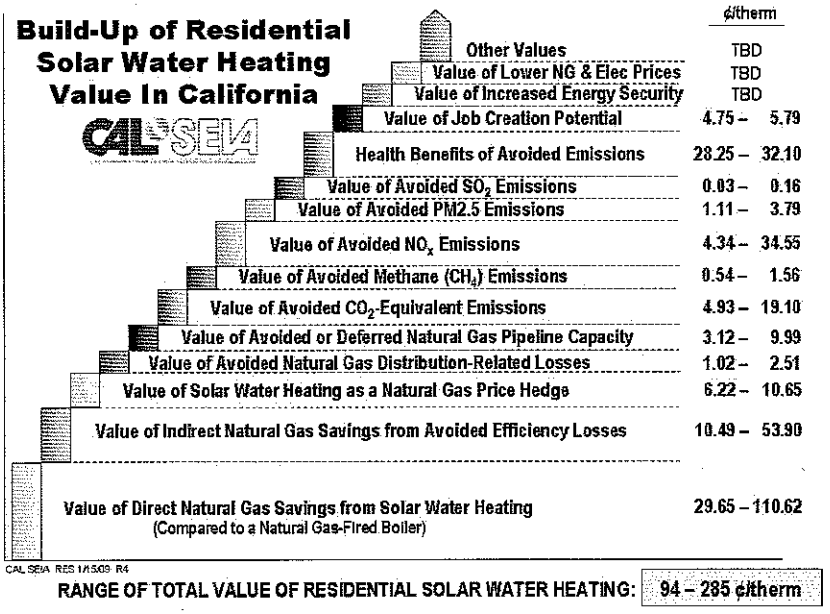
- **Creates a significant number of local jobs as solar water heating is extremely labor intensive**
- **Makes solar more affordable and within the reach of Connecticut families across all economic backgrounds**
- **Reduces the cost of the Renewable Portfolio Standard to Connecticut rate-payers**
- **Reduces the cost of energy for Connecticut rate-payers**
- **Increases revenue for the state of Connecticut (applicable tax and permitting income)**
- **Provides numerous environmental benefits including CO2 reductions as well as a significant reduction in local pollutants such as NOx and SOx**
- **No additional costs to Connecticut tax payers (the proposed amendment is budget neutral)**

Perhaps the most important reason to include solar water heating in the RPS is the market mechanism that the RPS provides - it is critical to stable and sustainable solar water heating industry over the long term, and to enable solar water heating companies to grow confidently and hire new employees. Unlike rebate dollars which can be reallocated to other programs or reduced via the state budget, the Renewable Portfolio Standard provides a stable, dependable mechanism that enables companies to plan and forecast growth. Companies cannot depend on the availability of public dollars for rebate programs, however SRECs provide a stable mechanism that will help both solar PV and solar water heating grow into sustainable industries overtime. I encourage you to look at New Jersey as a recent

example of how SRECs create stability in the market: Governor Christie recently cut solar rebate dollars almost entirely, yet the industry was able to sustain itself solely through SRECs.

I think it is also noteworthy to point out a recent CALSEIA report (http://calseia.org/news) which quantifies the benefits of solar water heating extremely well: "...For every 40 cents invested in solar water heating technologies, rate-payers will conservatively reap between 90 cents and $3.50 in energy, health impacts, greenhouse gas reductions, and job creation."

Some will say solar water heating does not belong in the RPS because it does not generate electricity, but energy is energy; although it takes multiple forms. Electricity is a form of energy just as heat is a form of energy. It is inefficient to transform electricity into heat energy for heating applications just as it is inefficient to transform heat energy into electricity - both heat generation and electricity generation mitigate our reliance on fossil fuels and therefore our pollution problems.



Solar water heating uses the sun as fuel to generate energy in the form of heat. This heat could be turned in electricity, however it is much more efficient to simply utilize this heat energy for heating - in this case, water heating. Solar water heating is approximately 60% efficient at turning the sun into usable energy; for comparison's sake, solar PV is only about 15% efficient at turning the sun into usable electricity. Also, many people are misinformed that solar water heating is energy efficiency- this is a major misconception. Solar water heating panels absorb the sun's energy, just as solar PV panels do. By definition it requires energy to heat, so if solar water heating were in fact energy efficiency no heating would occur and the water would remain cold. Rather, solar water heating diversifies Connecticut's fuel sources - reducing our reliance on fossil fuels in the same manner that solar PV does.

Furthermore, from a macro perspective all solar energy looks the same. Any solar resource in Connecticut, whether PV or solar water heating, reduces the need for natural gas and fuel oil consumption. This is because natural gas and fuel oil are the fuel sources typically used during peak solar generation hours in Connecticut. Therefore whether we look at PV and SWH, the end result is the same: less natural gas and fuel oil is required for energy generation.

Ultimately, the Renewable Portfolio Standard has three objectives: 1) diversifying the fuel resources Connecticut relies upon, 2) developing a sustainable renewable energy industry within the state, and 3) stabilizing energy and electricity costs such that long-term price increases in fossil fuels are mitigated. Making solar water heating count towards Connecticut's solar energy goals bolsters all three of these objectives and for that reason Skyline Innovations, along with the greater Connecticut solar water heating industry, strongly urges the committee to consider the proposed budget neutral amendment. It will produce substantial benefits for Connecticut, the state's solar water heating industry, the broader Connecticut solar industry, many homeowners and businesses, and perhaps most importantly, create a significant number of good, stable jobs right here in Connecticut.

AMENDMENT OFFERED FOR SB 1
AN ACT CONCERNING CONNECTICUT'S ENERGY FUTURE

January Session, 2011
LCO No. 4531
*04531SB00001ET_*
Referred to Committee on Energy and Technology

SB 1 (Fonfara, Looney, Williams)

Intent of Amendment: To make solar thermal energy for the purpose of solar water heating an eligible tier one solar resource eligible to receive Solar Renewable Energy Credits within the Renewable Portfolio Standard.

The amendment within is:
FOR the purpose of providing that energy from a certain solar water heating system is eligible for inclusion in meeting the renewable energy portfolio standard; providing that a person that owns and operates a certain solar water heating system shall receive a certain renewable energy credit under certain circumstances; requiring the total amount of energy generated and consumed by a nonresidential or commercial solar water heating system to be measured by a certain meter; requiring the total amount of energy generated and consumed by a residential solar water heating system to be measured in a certain way; defining a certain term; requiring that certain solar water heating systems be installed in accordance with applicable State and local plumbing codes; and generally relating to the eligibility of solar water heating systems for inclusion in meeting the renewable energy portfolio standard.

Sec. 8 (a)
53 **"SOLAR WATER HEATING SYSTEM" MEANS A SYSTEM THAT:** (A) (1) IS COMPRISED OF GLAZED LIQUID-TYPE FLAT-PLATE OR TUBULAR SOLAR COLLECTORS AS DEFINED AND CERTIFIED AS OG-100 BY THE SOLAR RATINGS AND CERTIFICATION CORPORATION; (2) GENERATES ENERGY USING SOLAR RADIATION FOR THE PURPOSE OF HEATING WATER; AND (3) DOES NOT FEED ELECTRICITY BACK TO THE ELECTRIC GRID. (B) A "SOLAR WATER HEATING SYSTEM" DOES NOT INCLUDE A SYSTEM THAT GENERATES ENERGY USING SOLAR RADIATION FOR THE SOLE PURPOSE OF HEATING A HOT TUB OR SWIMMING POOL. (C) A PERSON THAT OWNS AND OPERATES A SOLAR WATER HEATING SYSTEM SHALL RECEIVE A RENEWABLE ENERGY CREDIT EQUAL TO THE AMOUNT OF ENERGY, CONVERTED FROM BTUS TO KILOWATT-HOURS, THAT IS GENERATED BY THE SYSTEM THAT IS USED BY THE PERSON FOR WATER HEATING. (D) THE TOTAL AMOUNT OF ENERGY GENERATED AND CONSUMED FOR A NONRESIDENTIAL OR COMMERCIAL SOLAR WATER HEATING SYSTEM SHALL BE MEASURED BY AN ON-SITE METER THAT MEETS THE REQUIRED PERFORMANCE STANDARDS OF THE INTERNATIONAL ORGANIZATION OF LEGAL METROLOGY; (E) THE TOTAL

AMOUNT OF ENERGY GENERATED AND CONSUMED BY A RESIDENTIAL SOLAR WATER HEATING SYSTEM SHALL BE: (1) MEASURED BY A METER THAT MEETS THE REQUIRED STANDARDS OF THE INTERNATIONAL ORGANIZATION OF LEGAL METROLOGY; OR (2) MEASURED BY THE SOLAR RATINGS AND CERTIFICATION CORPORATION'S OG-300 THERMAL PERFORMANCE RATING FOR THE SYSTEM; AND (3) OG-300 CERTIFIED BY THE SOLAR RATINGS AND CERTIFICATION CORPORATION.

Sec. 8 (a) (26). "...(B) any electrical or solar water heating generation, including distributed generation, generated from a Class I renewable energy source;"

Sec. 8 (a) (40) "Customer-side distributed resources" means (A) the generation of electricity from a unit with a rating of not more than sixty-five megawatts on the premises of a retail end user within the transmission and distribution system including, but not limited to, fuel cells, photovoltaic systems or small wind turbines, or (B) a reduction in the demand for electricity on the premises of a retail end user in the distribution system through methods of conservation and load management, including, but not limited to, peak reduction systems and demand response systems, or (C) the generation of energy from a solar water heating system with a rating of not more than sixty-five megawatts on the premises of a retail end user located within the transmission and distribution system;

Sec. 57. (NEW) (*Effective July 1, 2011*) (a) The Renewable Energy Investments Board, created in section 16-245n of the general statutes, as amended by this act, shall structure and implement a residential solar investment program pursuant to this section and shall result in a minimum of thirty megawatts of new residential solar photovoltaic and/or solar water heating installations made up of any combination thereof located in this state on or before December 31, 2022. For the purposes of this section and sections 65 and 66 of this act, "residential" means dwellings with one to four units.

Sec. 57 (b) "The Renewable Energy Investments Board shall offer direct financial incentives, in the form of performance-based incentives or expected performance-based buydowns, for the purchase or lease of qualifying residential solar photovoltaic or solar water heating systems." "...The board shall consider willingness to pay studies and verified solar photovoltaic or solar water heating system characteristics, ..."

Sec. 57 (c) "... and (5) provide comparable economic incentives for the purchase or lease of qualifying residential solar photovoltaic and solar water heating systems." "...Nothing in this subsection shall restrict the board from modifying the approved incentive schedule before the issuance of its next comprehensive plan to account for changes in federal or state law or regulation or developments in the solar market when such changes would affect the expected return on investment for a typical residential solar photovoltaic or solar water heating system by twenty per cent or more."

Sec. (d) "...(3) procedures to provide reasonable assurance that such reservations are made and incentives are paid out only to qualifying residential solar photovoltaic or solar water heating systems demonstrating a high likelihood of being installed and operated as indicated in application materials; and ..."

Sec. 58. (NEW) (*Effective July 1, 2011*) (a) Commencing on January 1, 2012, and within the period established in subsection (a) of section 21 of this act, each electric distribution company shall solicit and file with the Department of Energy and Environmental Protection for its approval, one or more long-term power purchase contracts with owners or developers of customer-sited solar photovoltaic or solar water heating generation projects that are less than two thousand kilowatts in size, located on the customer side of the revenue meter and serve, or are located within, the distribution system of the electric distribution company.

Sec. 58. (b) "Solicitations conducted by the electric distribution company shall be for the purchase of solar renewable energy credits produced by eligible customer-sited solar photovoltaic or solar water heating generating projects over the duration of the long-term contract. ..."

Sec. 58. (c) "The aggregate procurement of solar renewable energy credits by electric distribution companies pursuant to this section shall be no less than four million three hundred fifty thousand. The production of a megawatt hour of electricity or energy equivalent from a Class I solar renewable energy source first placed in service on or after the effective date of this section shall create one solar renewable energy credit. ..."

Sec. 59. (f) "...Funds collected by the department pursuant to this section shall be used to support the deployment of solar photovoltaic and solar water heating generating systems installed in the state with priority given to otherwise underserved market segments, including, but not limited to, low-income housing, schools and other public buildings and nonprofits."

Sec. 60. (NEW) (*Effective July 1, 2011*) (a) "...The survey shall rank state-owned or operated facilities based on their technical feasibility to accommodate solar photovoltaic and solar water heating generating systems by considering such factors as: ..."

Sec. 60 Sec. (b) "The Department of Energy and Environmental Protection, shall, within available funding, issue one or more requests for proposals for the deployment of solar photovoltaic or solar water heating generating systems at state-owned or operated facilities." "The department may seek in any request for proposals the services of an entity to finance, design, construct, own or maintain such solar photovoltaic or solar water heating system under a long-term solar services agreement. ..."

Sec. 61. (NEW) (*Effective July 1, 2011*) (a) Each electric distribution company shall, not later than July 1, 2012, file with the Department of Energy and Environmental

Protection for its approval a tariff for production-based payments to owners or operators of Class I solar renewable energy source projects located in this state that are not less than one megawatt and connected directly to, or located within, the distribution system of an electric distribution company

Sec. 62. (NEW) (*Effective July 1, 2011*) The Department of Energy and Environmental Protection in consultation with the Renewable Energy Investment Fund established in section 16-245n of the general statutes, as amended by this act, and the Conservation and Load Management Fund established in section 16-245m of the general statutes, as amended by this act, ~~shall~~ may develop coordinated programs to create a self-sustaining market for solar thermal systems for electricity, natural gas and fuel oil customers.